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To: <GPerreir@waterboards.ca.gov>
Date: 8/15/2007 9:44:11 PM
Subject: White Slough Permit / Dr. Ken Hajek

(Gayleen, please confirm that you've received this. -- Thanks)

To: Ms. Gayleen Perreira, Central Valley Regional Water Board
From: Dr. Ken Hajek
Re: Proposed Lodi discharge permit

Dear Gayleen,

I apologize for my confusion when we communicated Thursday and Friday during my work-day. I have a clearer understanding now. The City is complacent because the new permit allows them to continue current practices at even higher volumes.

I was confused by a conceptual difference between myself and the Water Board. Your institutional approach deals only with the area around the plant and the concentrations in which the TDS and nitrate are carried beyond it. This may be suited to discharge into rivers. It is decidedly unsuited for discharge into an underground "lake" with no exit -- our aquifer.

This aquifer is county-wide and is relied upon for drinking water, irrigation, and other beneficial uses. The USGS indicates that 7 gallons are removed for every 6 Nature replaces, and this has gone on for some time. Thus water flows from the above-sea level Delta into the drawn-down far-below-sea-level aquifer. The City recognizes that flow in it's "Existing Conditions" report from Fall '06. By their own reporting the City discharges 11 tons of TDS per day within their wastewater to land above this flow. Crops on that land absorb less than 10% of the TDS (less than half the nitrate), and even under optimum conditions over ten tons per day continues past the root zone and to the groundwater flow. Increasing TDS levels degrade a water supply, and it matters not whether the tonnage is carried in solution at 4,500 ppm or 450 ppm if the aquifer is in overdraft and without exit. The TDS accumulates. "Influence of the Facility" is to be found where these materials accumulate. It could be ten miles east in the center of the aquifer. For the regulatory body to permit the continuation of this land-discharge practice (let alone its increase) without consideration of the ultimate destination and effect of those 4,000 annual tons of pollutants would be negligent.

Regarding that degradation, I quote from the EPA website, with reference to 40 CFR Part 131.12(a): "EPA's regulation also requires maintenance of high quality waters, except where the State finds that degradation is "necessary to accommodate important economic and social development.... ". We (the EPA) believe this phrase should be interpreted to prohibit point source degradation as unnecessary to accommodate important economic and social development if it could be partially or completely prevented through implementation of existing state-required BMPs." EPA-endorsed wetland wastewater treatment would be the "best management practice" because fully half of the TDS would be effectively degraded in that environment, as it is not with land. Further, wetland is a transitional step toward the inevitable ultimate use of reverse osmosis. Land discharge is not. If land discharge of urban wastewater is erroneously but bureaucratically defined as the "best management practice" then the State is out of date, is technologically backward, and is "salting the land". That should be corrected. Also, if it has the degradation has somehow been deemed

"necessary", where do I view the documented "finding" (as per Tier 2 requirements in the Antidegradation Policy).

Other items:

A. Regarding Section B. -Land Discharge Specifications, Item 1.: The deleterious TDS components, once placed on the soil, cannot be prevented from moving to the groundwater as this item seems to imply. Your technical experts understand that the TDS components cannot be held at some arbitrary level in the soil profile. If so little water is used that the TDS ions are allowed to concentrate in the root zone as the plants remove water by transpiration, the increasing concentrations will kill the crop. Irrigation must move it below the root zone. Once in that part of the soil profile, the TDS ions continue to be mobile and move to the groundwater with winter rains, further irrigation, or both.

B. Section E. Land Discharge Loading Limits, Item 1. This calculation method alone is inadequate. The City needs a further requirement that there be a fully established root zone as a precondition for discharge. When the City grows corn with the wastewater there are very few roots for uptake for fully half the crop growing time. Nitrate uptake by seeds and small plants is essentially nil, and because the nitrate ion is not retained on soil particles it moves to groundwater. If the calculation averages out to the correct theoretical amount prescribed for a seed-crop cycle, then it accomplishes neither purpose -- the groundwater is not protected and the maturing crop has insufficient nitrogen. The other TDS components are very mobile as well.

C. My orchard is roughly one mile from the Facility. My trees turn sickly yellow every July and August as the groundwater deteriorates from acceptable spring or late fall irrigation water analyses. The yellowing is associated with chloride, nitrate, and TDS levels higher than Lodi's permit rate. These levels seem appropriately timed with Lodi's land discharge just over a mile away via the seasonal draw of groundwater to the northeast of the plant by agricultural acreage in that direction.

Are there high spikes in chloride concentrations because chloride is sent to the Facility that way from the power plant and discharged? Are the byproducts and processing chemicals sent from the cannery causing transient but prolonged spikes in nitrate concentrations?. Such spikes would cause damage to beneficial uses even though a longer reporting period would average out those high concentrations. Definition of the situation requires frequent sampling in the first year, then reduced sampling during critical periods. Infrequent sampling at the outset (such as your quarterly sampling requirement for some parameters) would continue to mask such problems.

D. Regarding the authority of the Order: City compliance with the monitoring requirements of the previous permits has been poor; City land discharge of nitrate was markedly above-permit allowances for fully five years, and when called on it they proposed to continue for another three to five years; and the City even diminishes your maximum discharge limitation for the nitrate component, referring to it only as a "goal" in their "Existing Conditions" report. These are indicators of a lack of respect for the Board's authority and intentions, and this attitude has brought them only benefit. Will this new permit be similarly compromised?

--Sincerely,

Dr. Ken Hajek

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